PROJECT 10073 RECORD

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2. LOCATION		
Bethel, Vermont		
10, CONCLUSION		
Other (TRACER BULLETS)		
11. BRIEF SUMMARY AND ANALYSIS		
SHE CASE FILE		
	2. LOCATION  Bethel, Vermont  10. CONCLUSION  Other (TRACER BULLETS)  11. BRIEF SUMMARY AND ANALYSIS	2. LOCATION  Bethel, Vermont  10. CONCLUSION  Other (TRACER BULLETS)  11. BRIEF SUMMARY AND ANALYSIS

FTD SEP 63 0-329 (TDE) Previous editions of this form may be used.

I start with the same of the of some of the day whater the the thempoint inge tory surrey from one or the Man and Beauty, . Therega sing dear mound whom my windows without stre son term minimum to the thinks. Again I then to make my the Free day and retirented rebet wing approved to to so sout James to Mark Some first of the year of south Transling, when it was to from translined surpice. I weekly to the the age, and mile alditide many deffer but a seine That is proceed the residence of the second of +under with sym. aft model continuity . . . in returning to - proment were to me without of the

a. O Seon on Bother-Anadolph Beat av Two Different Group Say Three Bright Objects Fil Across Path Last "Lek Monuary Tourists - a Onger Sprew? Up a at the time. Physical conversing? incumit- for Woods - Alle the Phage and the partition of the state What were the three bright but to be and he digit delicy . Take the contract wasky laws would work lagrandery rolls builded Menday account five o'clock in Just how there buller in pend the afternatur Michael between to be shooting ources the high-Regulated and Barbel? why within a 1 1 mile of each The Thirty were gone by at other to a my very, horsever, THE TWO SCHUTTER GROUPS OF to the travelley from Bathel Annihar of July 12 to a spring to Drafolph and were reported was respect to the Hearithy 5-7 15-1-1to instrict of lying through Pirot pintie report was made Danie field golf late at might. to the Burlington True Street by The individual was was in the Der Theread S. Wesdrudgeters back seat and did not see the is the was returning Thing still the Productive from from a jury gave to Heattle have pent had seen that the same present printed by August Parcellage times. Che suid, "Dook at that. Dr. Wee he for intelligett nota: \*\*155 m. - 7 in lineave person What a peculiar pattern e Highes. Looks like a flying sau-De la mos state troppe er?" In a wantbell report. they pursues was when a series KI PLIK . TO L. I that no one said anything for "As we were disving alone miles, the observer toported. fon the road between Berheland The laystery of UPO's or fly Rambioli, about 4:20 or 5 p. m. ing saucers or Things has been syddenly, just above the treesubject of much smidy in the past tops to cur left, an object come 15 years brought to the fore evrapidly into right. It carried on ery once in a willie by storeoras be red light about the ments from prominent persons size of a fontiall. implying that calicial government branch know much more "The trooper said, "My God, about them they will admit. did you saw that?" Scientists at Cope Kennedy re-"Just then a second came inported UFO's trailing a Gemini to view. It flow the same course space capsule shortly after as the first, to our right above hunching in July hat the nightthe valley, then disappeared ings have never been confirmed awiftly into the say. "Then come a third, exactly by the Air Force. Probably one like the first rwo, one, two, of the most proline writers on three, just like that. 1470's has been Major Donald F. "The trought and I week Neyhoe, U.S. Marine Corps, Respellbound. The unidentified tired. His first book, "Flying flying object, or UFO as they Saucers Are Real," created inare known, appeared to be round tense interest in 1950 and was but they were traveling so fast, followed in 1955 by "Flying We really couldn't may." Sallcers from Guter Space," SEEN BY FOUR OTHERS based on his conclusions that Dr. Woodruff's report seems the UFO's are actually sent to be correborated by an enfrom and controlled by forces in tirely separate report from four outer space. The Air Force, Randolph men who were on their all these min die which has conducted investigaway bome from work. They are tions for years of all sightless, Charles Helman, Chuck Herch. has never officially desied this Wayne Laige and Howard Frine. as a possibility, but has relied liter story, as told by Holmail will that although usually on its conclusion that man, is as follows: UFO's are due to some strange. We were driving along the flat natural phenomena completely between Ecthol and Randriph inknown to actentiate at presbefore you come to Finley heldge when all of a sudden an abject grouped in front of the. ANY MORE? to was reddish pink in color and The Merale's UEO reportur scenied to be the size of the diwhile he yied to reacive any have it grouped from west toother adocutes of strangentyhte. out and was about 75 to 100 Ings in the White River Valley on the ground. Before we spougathe corner to the bridge a Mario, nomero surgusted, meend one shot across. Wether Wirk Work the objects seen a the up the bill by the Rogers skiers from out-rer are lest the for may or a very me. top by Ala " ted outs

REPUBLING. I

"As we were driving along (on the road between Betheland about 4:30 or 5 p. m. sudden,, just above the treetops to our left, an object came rapidly into sight. It carried an orangish - red light about the size of a football.

"The trooper said, "My God,

did you see that?"

"Just then a second came into view. It flew the same course as the first, to our right above the valley, then disappeared swiftly into the sky.

"Then came a third, exactly like the first two, one, two,

three, just like that.

"The trooper and I were spellbound. The unidentified flying object, or UFO as they are known, appeared to be round but they were traveling so fast, we really couldn't say."

SHEN BY FOUR OTHERS

Dr. Woodruff's report seems to be correborated by an entirely separate report from four Randoigh men who were on their way home from work. They are Charles Holman, Chuck Hatch, Wayne Luce and Howard Frink.

Their story, as told by Hol-

man, is as follows:

We were driving along the flat between Bethel and Randolph before you come to Finley bridge when all of a sudden an object crossed in front of us. It was reddish pink in color and seemed to be the size of a ternis ball. It crossed from west to would be glad to receive any east and was about 75 to 100 feet off the ground. Before we ings in the White River Valley made the corner to the bridge a second one shot across. We then Went up the hill by the Rogers house and just at the top by Allen's barn we saw the third one. This one was only about as high as the windshield and only a car length in front of us.

Bolman said it was about five o'clock, the same time as Dr. Woodruff had reported. He said he believed Woodruff must have been in one of two cars behind

two persons was such a sec-3 that no one said anything for quiles, the observer ported.

The mysterv of Ul orflying saucers or Things has been subject of much study in the past 15 years brought to the fore every once in a while by statements from prominent persons implying that official government organs know much more about them than they will admit. Scientists at Cape Kennedy reported UFO's trailing a Gemini space capsule shortly after launching in July but the sightings have never been confirmed

by the Air Force. Probably one of the most prolific writers on UFO's has been Major Donald E. Neyhoe, U.S. Marine Corps, Retired. Ills first book, "Flying Saucers Are Real," createdintense interest in 1950 and was followed in 1953 by "Flying Saucers from Outer Space," based on his conclusions that the UFO's are acqually sent from and controlled by forces in outer space. The Air Force, which has conducted investigations for years of all sightings, has never officially denied this as a possibility, but has relied usually on its conclusion that UFO's are due to some strange natural phenomena completely unknown to scientists at pres-

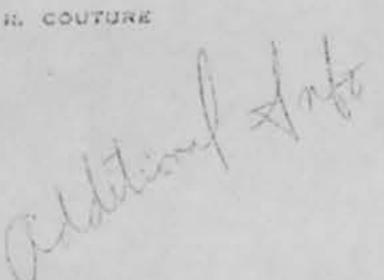
ANY MORE?

The Herald's UFO reporter other accounts efstrangesight-

Maybe, someone suggested, the objects seen last week were skiers from outer space looking for snow and leaving this valley in disgust!

Women like a strong, silent man because they think he is: listening.

PTER VAL PREDA, CHARRAN CAMALO E. MELAUGHLIN EMILE E. COUTURE





EDWARD F. KNAPP. COMMISSIONER
RICHARD F. HURD. ACHOMAUTICS SURLAVISOR
DAVID W. CUMMINGS, AMPORT ENGINEER

8 January 1965

Mr. Walter N. Webb
Chiel Lecturer in Astronomy (Apaid Odval of MICAP)
Charles Hayden Planetarium
Eoston Museum of Science
18 Shepard Street
Cambridge 38, Massachusetts

Dear Mr. Webb:

(note: Wait to probable methods but additional information by Woodsolf transfer the probable methods but the distribution of moderate transfer the objects fortune in front of a the has make the motion theory in front of a the has make the motion theory like trackle)

I was advised in a communication of May 25, 1964, from Mr. Richard Hall that reports of UFO should be forwarded to you for analysis. Accordingly, I am enclosing the attached clipping taken from the Burlington Free Press of January 8 which refers to a UFO sighting on 4 January at a point about three miles north of Bethel, Vermont, on Route 12 about 5:00 pm.

I have talked personally with Dr. Richard S. Woodruff, State Pathologist at Burlington, and Corporal Ronald Woodward of the State Police Identification Bureau here in Montpelier.

The sightings were made from a car which was being driven by Cpl. Woodward. Both men saw the UFO simultaneously as they did the two following UFO's. Dr. Woodruff's impressions were to the effect that the flight path was relatively horizontal from west to east across the highway as their car was proceeding north; Cpl. Woodward describes it as more of an arc rising from the ground on the west to an elevation of 25°-35° and returning to the ground east of the highway. Both agree that the object had no visible tail of flame; both agree that it was more or less round, and was more of a glow than a ball of fire. Dr. Woodruff describes the color as orange-red; Cpl. Noodward refers to it as "more on the red".

There was no noise at any time. The objects were in view only a few seconds each.

Spacing between the three sightings was several seconds each.

Col. Woodward placed the height of the object in appearance as 200300' above the ground; Dr. Woodruff stated it was low, but did not
estimate altitude.

Mr. Walter Webb -2-8 January 1965 The flight path of the three sightings appeared to be fixed inasmuch as the third sighting was through the top of the car windshield at which point the car appeared to be "almost underneath" the flight Both agree that two cars passed them in the opposite direction within a law seconds of the of the sightings. Cpl. Woodward recalls having followed a car ahead of him for some distance, and noted that this car eventually left Route 12 in the Town of Randolph. This car contained four men but as of writing no other reports of sighting have been received. It might be possible to locate these men in Randolph if, as it appeared, they were en-route to work in a local mill. In the event you wish to make further contact, the addresses of the observers is: Dr. Richard S. Woodruff, State Pathologist University of Vermont, Burlington, Vermont Cpl. Ronald Woodward, Assistant Superintendent Vermont State Police Annex Bailey Avenue Extension Montpelier, Vermont The only explanation occurring to me as the possibility of an Air Force tanker and refueling operation which may have been in progress, but this does not emplain the rapid flight or the close spacing. During such refueling, the tankers on clear nights are lighted externally for easy identification. These operations usually originate at the Plattsburgh, New York, Air Force Base. I have not checked as to whether a refueling operation might have occurred in the area at that time. Commissione EFK/ebh Enc. cc: Richard Hall Dr. R. Woodruff Cpl. Woodward

13 Friend Court Wenham, Massachusetts

SUBJECT: UFO Report - 4 January 1965

CONTENTS: Signed NICAP UFO Questionnaire

UFO Sighting Summary Sheet

Map of Sighting Area Sample Newsclip

Partinent correspondence

DATE: 18 January 1965

FROM: Raymond E. Fowler

Chairman: NICAP Massachusetts Investigating Subcommittee

TO: NATIONAL INVESTIGATIONS COMMITTEE ON AERIAL PHENOMENA

Washington, D.C.

Attention: Richard Hall (Acting Director)

cc.\ USAF (AFSC-FTD) W.N. Webb

The following is a detailed report concerning the sighting of three (3) UFOs between Bethel and Randolph, Vermont - Highway #12 on 4 January 1965 by Dr. Richard Woodruff and Vermont State Trooper R.J. Woodward at approximately 5:15 P.M. EST.

Respectfully Submitted

Raymond E. Fowler NICAP Investigator

REF/ref

UFO SICHEING SUPPLARY STREET

#### UFO REPORT - 1/1/65

Witness #1 - Dr. Richard S. Woodruff Chiof Medical Examiner Office of State Pathologist Colloge of Medicine University of Vermont Burlington, Vermont 054.01

Education: B.A.; M.D.; C.N.

Occupation: Perenate Pathologica

(Name may be used)

PLACE: Detween Bothel and Randolph, Vermont on Highmay # 12

DATES 4 January 1965

#2 - Corporal R.J. Woodmard BUIL Division Volument Doph, Fublic Safety Montpolier, Vermont

Occupation: Spane Polace

(Notice sor to be used. pending permission

TIME: 5:15 FM EST (approximate)

SICHTING:

Of Vermont Gollege of Medicine, and respected sciencist, was travelling back to Burlington with Vermont State Trooper R.J. Woodward after testifying best to Burlington with Vermont State Trooper R.J. Woodward after testifying before a grand jury in Trattlebore, Vermont. As they were driving along Mighway # 12, suddenly, just above distant tree tops to their left, a sharply-drinned object glowing an exengish-red with an intensity summint less than as automobile headlight, dame repudity into sight and eresed the bighway in front of them. Its apparent sine was that of a football held at arm's longth. It appeared to be reund but the armet shape could not be actortained because of its great speed. Trooper Woodward exclaimed - "My Cod, did you see that?" - No seemer had he speken when a second similar object came into view followed chortly after by a third object! All followed the came flight course climbing elightly and moving West to East to their right and above the valley where they appeared to fade into the distance.

Duration of the sighting was 30 seconds. The objects were viewed through the automobile windshield. They appeared to be solid. No sound was heard. Speed was factor than a jet aircraft. Boulmated distance of the objects from the observers - 1/2 tolimile. The weather was clear, eters were visible and there was no moon. Dr. Woodruff reperted the incident to the Eurlington From Press and to Fr. Edward Knapp, Masd of the Vermont State Aeromautics Board. Several Vermont and May Mampshire papers carried a full account of this sighting. In his statement to the wress Dr. Woodruff said - "I have hesitated to call. I know everything I say will be open to misinterprotetion. But remember, two of us any the same thing at the seme time..... was not seeing things, and I am not too everly imaginative and neither is the treeper.

Treceived a signed NICAP UPO Questionneiro on January little Dr. Woodruff has passed on a questionneiro to Tresper Vectorid Caich I will forward to UEGAP upon receips.

Rospectivilly Submitted

13 Friend Court Wenham, Massachusetts

12 January 1965

ollogs of Medicine, onlyersity of Vermont Eurlington termont

Dear Jossor Woodruff,

of a Massachusetts Investigating Subcommittee for the North Investigating Committee on Aerial Phenomena locate at ashington, D.C. Our Subcommittee is comprised of eight men of various Technical backgrounds. Its function is to collect information on UFO Reports and send it to Washington for evaluation. If the UFO sighting(s) are local, we make an on-the-spot investigation and preliminary evaluation and send a dotailed report to N.T.C.A.P.

Diplication Free Press concerning your sighting. You all to be commended for making your sighting known to the public. Jany UFO reports are kept quiet. Our Mational organization's prime purpose in to keep the public informed about the UFO problem. Our Board of Governs and Palel of Special Advisors are made up of mon appresent at many professional fields. For example, a recent appointment to N.I.C.A.P.'s Board is Dr. Challes P. Olivier, resident of the American Mateor Society and renowned Astronomer. I mentical these things only to demonstrate that our organization is enjaged in serious UFO Research.

Freason for whiting is to obtain more information about UFO sighting. It assure you that your name will be kept out dential if you so desire although we would appreciate use of your name. I have enclosed two UFO Report forms for you, and if possible, the State Trooper to fill out if you would be so kind to former it to him. Please encwer as man questions as possible. If return it to me for processing.

Enclosed is a stamped self-addressed envelope for your convenience. Thank you so much for your help in this matter. I hope to hear from you soon.

Yours Sincerely,

Chairman: MICAP Mas. Jubcommittes

REF/rof

HOBERT II. AIREN M D. . H ALL NOS. WOODRUFF M.D. C.M. COMMISSIONER HIRF MI. EZAMINER STATE OF VERMONT DEPART ENT OF HEALTH OFFICE OF STATE PATROLOGIST U M DELEGISH MEDIC NE URLINGTON January 15, 1965 Mr. mond E. Fowler ha han: NICAP Mass. Subcommittee 3 Lend Court wen m, Massac L Des Fowler: enclosing to ed orm which you forwarded me nd have sent t ... Mo tpelier fo t rporal Woodard's use. - the inform in a which I am at le supply is and therefore but the objects e saw we \_ . . . such a chort time i . . he darkness that I, for . . . be more definitive roout them. I am . 1so . . losing a . . . Locopy of that portion .. I the Verm y map snowing the area concerne: nd have marke with a rec plastic square. In addition, I am all enclosing a photocopy of two news reports which came out in one of the local papers at the time. Sincerely yours, Acharc S. Woodruff, M.D. hologist RSI Enc

North 1-7434

#### REPORT ON UNIDENTIFIED FLYING OBJECT(S)

Nashington . D. C.

This fi de as asked by the United States Air Force and by other Armed Forces' investigating a pencies, and additional th same . needed for full evaluation by NICAP questio aformation has been fully studied, the conclusion of our evaluation one will be published. MICA is regularly he or in a med publication. Please try to answer at how were a as possible. Should you need anal room, nonk you. DORUFF, M. D. C. M. en Sta Ver HEDICAL EXAMINER Nume F & SE OF STATE PATHOLOGIST Addn orensic ...logi LEGE OF MEDICINE IVERSITY OF VERMON. B. A. ; M. .. M. Laucation JURLINGTON, VERMONT 05401 Special Training Pathology \* Universit 5 511 Military Service1918-1919;1943-19: incl. Do of Observation Jan. 1965 AM 1715 家 ap rone Zone Atlantic Time Locality of Observation Be-ween Bethe & Randolph Vermont on highway 12. 3. 4. How long did you see the object? Hous Minutes 30 Seconds 5. Please describe weather conditions and the type o. . i.e. sright daylight, nighttime, dusk, etc. night. ime Position of the Sun or Moon in . to the object and to you. No moon 6. 7. If seen at night, twilight, or down, were the tors or moon visit a? Sta sible, 11. Were there me one object? Yes - please tell how many, are a sketch a. you saw, indication, - West East direction of me ont, it any. salitional set straper, if necessary. Lighted solid objects, not 9. Place describe etc? Please us aditional yet of paper, if necessary. revolvi. 3 Was the object(s, .righter than the oc.: kground of the sky? Yes 10. 11. compare in orightness with the Sun, Moon, headlights, are. Somewhat less that hea thts. 12 he object(s) -( · ease elaborare, i you ... a details.) No Appear to stan ...t any time? No Suddenly speed ... we rush away at any time? b. No British up into par. =>slode? No Give off smoke? No Leave any visible tra-Drop anything? No Change brightness? Ihong. Change - -No Did the object(s) at any time in front of, or behind of, anything? If so, please elaborate giving distance, size, etc, if possibility d the tops of distant trees. . Passed bet. there any wind? No If so, places give direction and speed. Did you observe the object(s) through an optical instrument or other a.d, windshield, windowpane, we may a, screening, 100 Whar? Windshield etc? Yes 16. Did the abject(s) has any sound? No What kind? FICTW Please tell if the ob t(s) was (were) ---17. Fuzz: or blurred. 10 Like . bright star, .es Shorply outlined. C.

# DEARBORN OBSERVATORY NORTHWESTERN UNIVERSITY EVANSTON, ILLINOIS 60201

#### A report on the Bethel, Vermont, sighting of 4 January 1965.

This case was investigated by Dr. J. Allen Hynek who visited Bethel,

Verment and Birlington, Vermont, to interview Doctor

After an essentially all day investigation,

the conclusion of the interviewer is that, with a high degree of

probability, the sighting was that of tracer bullets fired over the

highway from a wooded elevation immediately adjacent to the road and

rising from it. Statements of the two Randolph men,

and

Mr. which seem to have the most weight, were that "the tra
jectories and general appearance of the luminous balls were exactly

like those of tracer bullets he had seen many times during World War II."

In addition to this statement, it is well-known that there are lads in the neighborhood who are given to playing pranks. It is relatively easy to obtain such tracer shells in the open market; and that there were no laws in Vermont projibiting the use of same. It is quite understandable that even mature observers traveling along the highway would be taken by surprise by such an unexpected and unusual observation. In view of the statements of the witnesses interviewed it seems highly likely to the interviewer that the sighting was indeed the result of the firing of tracer bullets across the highway.

You may use my name,

35.

Dete of filling out this reports 47 - 15,1965

Please keep my name confidential.

#### 13 Friend Court Wenham, Massachusetts

SUBJECT:

Addendum: UFO Report - 4 January 1965

CONTENTS:

Additional Signed NICAP UFO Questionnaire

BATE:

19 January 1965

FROM:

Raymond E. Fowler

Chairman: NICAP Massachusetts Investigating Subcommittee

TO:

NATIONAL INVESTIGATIONS COMMITTEE ON AERIAL PHENOMENA

Washington, D.C.

Attention: Richard Hall (Acting Director)

oc L USAF (AFSC-FTD)

Attached is additional data pertinent to the UFO Report transmitted to you by me on 18 January 1965. Re. The sighting of three (3) UFOs between Eathel and Handoloh, Vermont - Highway #12 on 4 January 1965 by Dr. Richard Woodruff and Vermont State Trooper Ronald J. Woodward at approximately 5:15 P.M. EST.

The additional data is recorded on a standard NICAP UFO Guestionnaire which was filled out and signed by Trooper Woodward. He has asked that his name be kept confidential. Except for minor differences in time and distance estimates, his report is substantially the same as that of Dr. Woodruff's report. His supporting testimony is valuable especially in that he is a well qualified observor.

I would comment that some of the recent sightings in Washington, Virginia and Maryland are of similar objects to that reported in the above-mentioned sighting.

Respectfully submitted,

Raymond E. Fowler NIC/P Investigator

REF/ref

NATIONAL INVESTIGATIONS COMMITTEE ON ARRIAL PHENOMENA 1536 Connecticut Avenue N. W. Washington 6, D. C.

North 7-9434

#### REPORT ON UNIDENTIFIED FLYING OBJECT(5)

This form includes questions asked by the United States Air Force and by other Armed Forces' investigating agencies, and additional questions to which answers are needed for full evaluation by NICAP.

After all the information has been fully studied, the conclusion of our Evaluation Panel will be published by NICAP in its regularly Issued magazine or in another publication. Please try to answer as many questions as possible. Should you need additional room, please use another theet of paper. Please print or typewrite. Your assistance is of great value and is genuinely appreciated. Thank you.

1.	Name pa			Diana of Earles			
	. Au	nald J. Woodward		riace or Employme	or vermont D	ept. Public Sa	rety
		pt. Public Safety		Occupation	Assistant	Superintender	rt.
		mont State Police	Carrow Co			Identificatio	
	Mo	ntpelier, Vermont 05	602	Education	2744 5444 64		211
	Telephone	223-5211 Ext. 58		Military Service	Advanced Su Army	bjects-Police	Science
2.	Date of Obse	rvetion 4 January 19	65	Time Ah	4 1700 PM	EST Time Zone	
3.	Locality of C	bservation Vt. Route 12	Travelling	North betwee	n Bethel an	d Randolph	
4.	How long did	you see the object?	Hours	Minutes ? Sec	cands		
5,	Please descri	be weather conditions and the	type of sky; i.e	., bright daylight,	nighttime, dusk,	etc.	
6.	Position of th	e Sun or Moon in relation to th	of bnu toeldo en	you.			
7.	If seen at nig	ht, hvillight, or dawn, were th	e stars or moon v	dalble? no			
3.	Viere there a	novement, if any. West to	If so, place East	se tell how many, o	nd draw a sketch	of what you saw, In	dicating
9.	Please descrit	oe the object(s) in detail. For	Instance, did It	(they) appear solid,	or only as a sour	ca of light; was it re	volving,
10.	"roman ca Wes the obje	use additional sheets of paper, ndle" type of firewo ot(s) brighter than the backgr	rks except ound of the sky	ppeared round larger and tr	avelling at	d in color; no greater rate	of spe
11.		the brightness with the Sun,	yes				
12.	Did the obje	to to	il light.		2.2		
14.	Dia 11st opt				friense elebou	ate, If you can give	derails.)
	o.	Appear to stand still at any	time? no				
	b.	Suddenly speed up and rush	away at any time	? maintained	even speed		
	c.	Break up into parts or explor	ie? no				
	<b>3.</b>	Give off smoke?	no				
	8.	Laave any visible trail?	no				
	f.	Drop anything?	no				
	9-	Change brightness?	no				
	h	Change shape?	no				
	1.	Change color?	no				
13.	Did the object	(s) at any time pass in front of, o	r behind of, anyth	ning? If so, please a	b galvig etmodal	istance, size, etc, if	possible.
14.	Was there on:	wind? If so,		action and speed.			
15.	Did you obse	rve the object(s) through an ap What?	otical instrument	or other aid, windsh	risid, windawpan	e, storm window, so	reaning,
16.	Did the object	t(i) have any sound? none h	eard What	kind?	How	loud?	
17.	Please tell if	the object(s) was (were)					
	cı.	Fuzzy or blurred.					

Like a bright star.

Sharply outlined.

18.	Was the object -
	a. /Self-luminous?/ b. Dull timish: c. Reflecting? d. Transparent?
19. 20.	Did the object(s) rise or fall while in motion? Described a trajectory involving a shallow are as opposed to abruptly rising to a peak and gradually aroing downward.  Tell the apparent size of the object(s) when compared with the following held at arm's length:
	b. Pea e. Half dellar h. Grapefruit or possibly somewhat larger. c. Dime f. Silver dellar i. Larger  This is only an approximation due to the short interval of visibility.  Or, if easier, give apparent size in inches on a ruler held at arm's length.
21,	How did you happen to notice the object(s) ?objects were observed while operating a motor vehicle
22.	Where were you and what were you doing at the time? enroute North on Vt. Route # 12 as operator of
23.	How did the object(s) disappear from view?
24.	Either over the Easterly horizon or downward to a nearby low mountainous area Compute the speed of the object(s) with a piston or jet already at the same apparent allitude.
25.	estimated to be in the vicinity of 2000 - 3000 feet per second* Were there any conventional directoff in the location at the time or immediately afterwards? If so, please elaborate.
26,	Please estimate the distance of the object(s).
27.	from 1/8 to 1/h mile distant.  What was the elevation of the object(s) in the sky? Please mark on this hemisphere sketch:
28.	200 to 300 feet, possibly slightly higher Names and addresses of other witnesses, If any.
29.	Richard S. Moodruff M. D. College of Medicine UVM, Burlington, Vt.  Please draw a map of the locality of the observation showing North; your position; the direction from which the object(s) appeared and disappeared from view; the direction of its course over the area; roods, towns, villages, railroods, and other landmarks within a mile.
	enclos ure
	enclos ure  * based on prior observation of and actual firing of tracer cal30 rifls ammunition.
30.	
30.	a based on prior observation of and actual firing of tracer cal30 rifls ammunition.
	is based on prior observation of and actual firing of tracer cal30 rifle ammunition.  Is there an airport, military, governmental, or research installation in the area? no
31.	Is there an airport, military, governmental, or research installation in the area? no  Have you seen other objects of an unidentified nature? If so, please describe these observations, using a separate these of paper.  No  Please enclose photographs, motion pictures, news clippings, notes of radio or television programs (include time, station and
31.	Is there an airport, military, governmental, or research installation in the area? no  Have you seen other objects of an unidentified nature? if so, please describe these observations, using a separate these of paper.  No  Please enclose phorographs, motion pictures, news clippings, notes of radio or television programs (include time, station and date, if possible) regarding this or similar observations, or any other background material. We will return the material to you.  Were you interrogated by Air Force investigators? By any other federal, state, county, or local officials? if so, please thate the name and rank or title of the agent, his office, and details as to where and when the questioning took place.  Edward Knapp, Vermont Commissioner of Aeronautics, Montpelier, Vt.  Were you asked or told not to reveal or discuss the incident? If so, were any recsons or official orders mentioned? Please
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31.	Is there an airport, military, governmental, or research installation in the area? no  Have you seen other objects of an unidentified nature? if so, please describe these observations, using a separate these of paper.  Please enciose phorographs, motion pictures, news clippings, notes of radio or television programs (include time, station and date, if possible) regarding this or similar observations, or any other background material. We will return the material to you.  Were you interrogated by Air Force investigators? By any other federal, state, county, or local officials? If so, please state the name and rank or title of the agent, his office, and details as to where and when the questioning took place.  Edward Knapp, Vermon's Commissioner of Aeronautice, Montpelier, Vt.  Were you asked or told not to reveal or discuss the incident? If so, were any reasons or official orders mentioned? Please elaborate carefully.  We should like permission to quote your name in connection with this report. This action will encourage order responsible citizens to report similar observations to MiCAP. However, if you prefer, we will keep your name confidential. Please rare your choice by checking the proper statement below. In any case, please fill in all parts of the form, for our own confidential files. Thank you for your cooperation.

MA

NICAP Massachusetts Subcommittee 13 Friend Court, Wenham, Massachusetts

31 January 1965

Dapartment of the Air Force Office of the Secretary United States Air Force Washington, D.C. 20330

Attention: Major Maston M. Jacks

Dear Major Jacks:

Thank you for your prompt return letter of 27 January informing me of the USAF evaluation of the UFO sighting made by Dr. Richard Woodruff and a Vermont State trooper - i.e. a probable observation of meteors, specifically from the Quadrantid meteor shower. Thank you also for the quick-reference sheet for meteor showers which will be easier to refer to than thumbing through reference books. I will send a merom copy of your letter to Dector Woodruff and the State trooper. I am sure they will be most interested in this official evaluation. I will ask for their comments concerning it and send a copy of such to you for information purposes. Meanwhile, whether these 3 UFOs were meteors or not, good sightings throughout the U.S. are increasing at a phenomenal rate as you are well aware of. Some of them are taking place in the Washington, Virginia and Haryland area - right in your backyard so to say! I realize that the agency controlling UFO censorship must feel that there are vital and justifiable reasons for the present official approach to the UFO problem. After all, what good would it do to create more anxiety in the world, etc. may be their philosophy. However, I sincerely hope that some kind of a public information program has been and is being prepared for when the full truth concerning UFOs must be told. What really disturbs ne is that the public is not being prepared for the real facts behind UFOs and that officialdom seemingly is waiting until it has to do something in this area. This to me is very dangerous for reasons which should be quite obvious to you.

In response to the USAF evaluation, I would like to make a few comments concerning our subcommittee and our evaluation of this particular UFO report. On our NICAP Massachusetts Subcommittee we have an Aeronautical Engineer, an Advanced Radar Research Engineer, have an Aeronautical Engineer, an Advanced Radar Research Engineer, A Radio Engineer, A Chemical Engineer, A Radiation Physicist, An Empert in Photography, A Public Relations man and myself, the present Chairman. Some of these men hold key positions in the Electronics industry and are developing the Advanced Ground Electrical System for the USAF Minuteman Missile at Syvania. One of these men has worked for the USAF on heavy Radars and has held of these men has worked for the USAF on heavy Radars and has held a position at Harvard Observatory in the field of Radio Astronomy.

I mention these f ts to assure you that our abcommittee is a technically-trained group who are genuinely merested in UFO investigation and evaluation - unlike the "Saucer Cultists" and others who have unfortunately created a "secondary UFO problem" in addition to the main one.

Meteors, of course, were immediate suspects but because of the high caliber of the witnesses involved and their description of the objects, it was decided that a UFO Report should be filed. The following facts tend to negate the Quadrantid meteor solution, although, of course, they do not in themselves prove that the objects were not meteors.

## THE QUADRANTID METEOR SHOWER

#### DATE:

1. Maximum - January 3 2. Minimum - January 1 - 4

## RADIANT POINT OF: (i.e. where they appear to emanate from)

Ceneral region of Constellations Bootes and Ursa Major. On January 4th this radiant point's approximate hour of culmination(highest point above horizon) was between 10:00 AM and 11:00 AM in the morning at Randolph, Vermont.

At 1 5:15 PM, these facts should be noted re Radiant Point:

a. It was located just above or below the approximate Northern horizon.

b. Thus, if these meteors could be observed at all at this time, they would appear to emanate from the Northern horizon in most cases.

both witnesses observed the objects coming over the Western horizon and disappearing over the Eastern horizon.

#### FREQUENCY OF: C.

- 1. At = 5:15 PM, the frequency of meteors sighted at this time would be at almost the lowest ebb because at this time we are facing in the opposite direction of the earth's motion in its orbit.
- BUT the witnesses observed 3 in rapid succession!

#### CHARACTERISTICS TENDING TO RULE OUT METEORS IN THIS SIGHTING II.

- Between the size of a grapefruit or football held at arm's length. I have yet to see or hear about anyone seeing 3 meteors in a row with this apparent size!
- DEFINITION: Sharply defined, unlike a glowing meteor.
- TRAIL: No visible trail. Very unusual for a meteor, especially of this size!
- Da SHAPE: Each of the 3 objects were identical in shape (and size). There was no change in shape or disintegration such as is usually especially noted in large meteors.
- ALTITUDE: An apparent 200-500 feet over the highway.

F. DISTANCE: 1/8 - 1 mile estimated.

G. FLIGHT PATH: Each followed an identical Flight Path. Very unusual if they were meteors, especially meteors of this size which must be extremly rare. I do not think even large bolides are of this size.

Thus, you can see why a UFO Report was filed. In addition, if one takes into consideration the fact that both witnesses have probably seen many meteors before, yet did not even entertain the possibility and that similar UFOs are being reported in the New England States at this time, he would at least be suspicious of the meteor answer.

I apologize for the length of this letter and do not expect an answer. I imagine your office is very busy at the present time trying "to put out fires (?)" so to say. I wonder if this sudden burst of UFO activity has anything to do with the close approach of Mars in March?

Enclosed are several newsclips for your information. I am corresponding with the witnesses. Walter Webb of Hayden Planatarium was planning to interview them yesterday. Perhaps a full report will be in the making. If so, a copy will be sent AFSC (FTD). A frefa friend of mine who subscribes to a nationwide clipping service informs me that he received 5 large brown envelopes (9 X 12 size) full of UFO clippings last week. Electro-magnatic effects accompanied many of these sightings as well. A Sylvanian who is studying the effects of Electro-magnetic fields from H-Bombs on the Minuteman system is intensely interested in this aspect of UFOs and in his spare time is working on some theories as to that kind of a propulsion system would cause these side effects. I am finding a keen interest in UFOS especially among technically trained people some of whom have received "black market" information via Air Force contacts. The NICAP "UFO Evidence" has been examined by many highly-technical men where I am employed and has received very favorable comments. NICAP may have its faults but you must admit it is doing an excellent job in spite of its lack of resources. Well, I've rambled on enough and will close now. Thank you again for your prompt response. I will be sending in some more reports soon, some of which are old but nevertheless interesting and may be of some statistical value.

> Raymond E. Fowler Chairman: Mass. NICAP Subcommittee

REF/ref

AHT PATH: Eas

Mr. Raymond E. Fowler 13 Friend Court, Wenham, Massachusetts

| FEB 6

Major Maston M. Jacks
SAF-OIPB
Department of the Air Force
Office of the Secretary
United States Air Force
Washington, D.C.
20330

ROBERT D. AINEN M. D. M.P. H.



STATE OF VERMONT
DEPARTMENT OF HEALTH
OFFICE OF STATE PATHOLOGIST
U. V. M. GOLLEGE OF MEDICINE
HUPLINGTON

February 9, 1965

Mr. Raymond E. Fowler Chairman: NICAP Mass. Subcommittee 13 Friend Court Wenham, Massachusetts

Dear Mr. Fowler:

Please excuse the delay in answering your letter of February 1st, but our medicolegal work has been so heavy these past few weeks that I have been out of the office a good part of the time and have not had an opportunity to respond as quickly as I probably should have done. With reference to the letter you received from Major Jacks of the Air Force, my only comment concerning this, is that I am amazed that the major could not come up with a better solution than this.

While I do not feel free to comment concerning Trooper Woodward's experience with meteors, although I am quite sure that he is able to recognize one when he sees it, I can say for myself that you were quite accurate in your answer to Major Jacks. I have seen numerous meteors in the past and, if I had thought that there was any possibility that the three objects we saw on that night were meteors, I never would have mentioned the matter. Also, your letter to Major Jacks enumerates quite well the various points concerning our "sightings" whereby a moving object such as a meteor could quite well be ruled out.

I shall acquaint Corporal Woodward of this response to your report and suggest that he might also see fit to write you concerning the Air Force diagnosis.

My one final comment on the matter is that while I make no speculations as to what the objects we saw might be, I do feel most definitely that they were not meteors.

Hymetr

FTD (TDEW) Wright-Patterson AFB, Chio 45433 29 July 1965

Dr J Allen Hynek Hervard College Observatory 60 Garden Street Cambridge, Massachusetts

Dear Allen,

This is to confirm discussions during your recent visit regarding the Bethel, Vermont observation by Dr. . and NICAP data relating to his observation. Note that the data gives the data for evaluation. Of particular interest is the data gives the Drington Free Press news article. The reports for additional witnesses have not, as yet, been received by the Air Force. In order that a conclusion to this case may be made, permission from the contractor has been obtained for you to conduct an investigation at Bethel.

In case the original data on this sighting is at Dearborn, we are attaching correspondence pertinent to this report.

Sincerely,

HECTOR QUINTANILLA, Jr

Major, USAF

Chice, Aerial Phenomena Branch

I am enclosing photostat copies of a letter and news item showing the names and addresses of the individuals who reported having seen what appeared to be the same objects we viewed at that same time and hope that you will be able to obtain some replies from them which may aid in furnishing further light upon this matter.

Sincerely yours,

Richard S. Woodruff, M.D.

State Pathologist

RSW:ddc Enc. MICAP HASSACHUSELLES VILVESTRAMENTO STRUCT LECTRAL E3 Prienc Court, Workern, Appoundmentes

Sulfillica: Addandum: WFC Report, Perlink-Kondelph, Vermont - & January 1935

DATE: 22 February 1965

PROM: Reguest E. Ferder Chairmant WESAF Heas, Envestigating Subscimituse

TO: NEGAP, Washington, D.C. co. USAY (AESG-FEG)

THAT EVALUATION: That. USAF OUTLOS OF INFORMATION LEFTER 27 January 1985

W. Wood

(Excerpt) - "The Air Ferre evaluates this eighting as a probable observation of meteors" (specifically of Guidrantias)

The Substantivine court a detailed analysis of the above USAF conditioning to Fredoot Musbook and to Dr. Weedenill, a prime with downersation that the motion conditation did not finall the Indea. A copy of Dr. Weedenil's Astron consenting on the USAF confunction and the Subscartives analysis is englassed. For those the receive a copy of only base printed of the Addenius sees casespie from his letter ere printed ballow.

DR. WOLDENS TEETER: Pased February 9, 1965

ADDITIONAL WENGESSES DO THES UPO SECRETION:

Charles Delman, Charles Detain, Name Inge, Herand Frank Browers Jothel and Rendelph, Versons - Highway Fie, about 5:00 Fil.

(States ont by Solden for group) - File vare (piving along the file between States and Sondalph before you come to carboy Dridge then all of a sudden an object traced in front of us. It was redding think in order and brough to the size of a tennes ball. It creases from took to ones and the size of a tennes ball. It creases from took to ones and the size of the tennes to the bridge, a second one shot sures. We turn that the the ball by the Eudger's berse and just at the top by Allen's bean we see the thin the the ball by the balled one. Les the attied then he beddered note bare been an one of the cure beddered by the care of the trace of the balled one to be beddered note been an one of the cure beddered by the trace of the cure beddered by the cure.

Bugh R. Wheatly, Randelph Ghairman of Hours of Spleasuren

a. . I was relucted to toll anyone other than my wife until I read. . . Popert in the paper. I believe I elso mentioned it to by the electrons who are in high school. I live in Handshiph Senter and work in Woodskock and thus travel the reute every day. Ascus a mile north of late I at approximately 4:50 Mt. I noticed the first object. The two fellowing appeared as even intervals of the travel to consend a manufactured to be a first object. about 1 to 2 coccade apare. To no the they appeared to be brilling red and parfectly round. The size in comparage to the surroundings seemed to se about time of a bancheil. They no meet to leave a start trail of sparter . I ruled ous any type of trescr bullet since the case I used gave off a long white trail to the point of impact. They appeared to me to have a trajectory over from me rether than a carehora, although they dicepteered from my vision bahind the eastern hillside. ... estimated that they appeared to be about two to three hundred foot off the ground and travelling about three to four hundred uph. I realine that the size, speed and eltitude may think the size, speed and eltitude may think a from Moodratt and trasper! but I believe that I are the same objects. ... It would extend by be interesting to know what we actually care?

BAGSRERS FROM SUBSCENEETES AMAZESES OF USAF EVALUATEON:

QUADRANTED DESCRIPTIONS

Mariaum = 1/1-4 Redient Point: Doobes-Wrsa Major Area Mariaum = 1/1-4 Gulminetism: 33:00 AM on January Ath

At 5:00 Mi:

2) Podiant Point just above or below approx, H. Morinan 2) Put, all mituouses observed UPOs soving out of the Uset and disappearing over the Leotern harinen. 3) Proquency of any natural edgeted at this hour would be almost at Louget observed as we are freship in the appearite direction of earth's motion in its arbit. But, withemen observed 3 UPOs in rapid succession!

Ashor Legite have see in suite out retorne

Sing: Down on the cine of a baseball and a football at smale length.

Doffmitting: Remai, shorply defined, unlike a glowing netters.

There is for sperie, so visible trail. Untited lerge lerge concern. Shrung: All come - no disinge or disintegration of noted in Arres wetners. Ashibitio: nover l honsrod foot Barbares 1/6 Inille Flaghe. Rash: Senel

lir. Raymond E. Fouler

13 Friend Court,

Wenham, Massachusetts

(NICAP Massachusetts Subcommittee)

AFSC (FTD) Wright-Patterson AFB, Dayton, Ohio

Attention: PROJECT BLUEBOOK

Wright-Patterson AFB, Obio 45433 19 February 1965

Charles P Olivier President, American Meteor Society 521 Morth Wynnewcod Avenue Narberth, Pennsylvania

Dear Dr Olivier,

Our office is interested in meteor sightings from the New England area on the evening of 4 Jan 65. We would appreciate any reports which you may have occuring between 4:45 and 5:30 pm EST, 4 Jan 65.

Sincerely,

HEUTOR QUINTANILLA, Jr Major, USAF Chief, Aerial Phenomena Branch

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## UNIVERSITY of PENNSYLVANIA

PHILADELPHIA 4

Flower and Cook Observatory

1965-3-22

Mejor Hector Quintanilla, Jr. Chiaf , Asrial Phanomena Bronch, Wright-Patterson. AFB, Ohio.

Dear Major Quintanilla:

At last I have man ged to get a report from New England covering the data you ask me about in a letter fully three wasks ago. It only come in this morning: I have no other reports covering vicinity, day, and hour limits.

As I have copied it, you eth keep it in your files. So do not bother to raturn. I am sorry about delay but as all my observers work as yel-unteers, I have only noral authority over them.

Again I wish to thank you for your mout valuable cooperation in sending us the fireball reports.

Most sincerely yours,

CATO Convert

C. P. CILIVIER

AMERICAN SETATA SECISTS

521 N. VAN FISCU AVE

MARRENTAL PA

Two date for your

A Vermont UFO sighting by Dr. Richard S. Woodruff, State Pathologist, and a State Police official, was dated Feb. 16, 1965, in the last issue. The correct date is Jan. 4. Dr. Woodruff, the police official, and other witnesses saw three low-flying objects race above a highway at an estimated 2,000 mph.

April-May 55 Issue

NATIONAL INVESTIGATIONS COMMITTEE

1536 Connecticut Ave. N.W., Washington 6, D.C. Payer 13 Buildingson, Vernous On Baraciful Lake Champlain

**JANUARY 8, 1965** 

### Doctor, Treoper Agree

# 3 UFOs Went Flying By

and respected scientist, was size of a football. it welling back to Burlington. "The trooper said, 'My god, have been the source of much with a Vermont State trooper, did you see that?' after testifying before the Han-, "Just then the second came publication, Sen. Everett Dirksor case grand jury in Brattle- into view. It flew the same sn, (R-III.) said the American

and 5 p.m., on Vermont Ted peared swiftly into the sky. between Bethel and Randolph. Thursday afternoon Dr. Wood-

rull called a reporter on In-Free Press, and said.

"I have hesitated to call. I know everything I say will be open to misinterpretation. But remember, two of us saw the

Dr. Richard S. Woodruff, Ver- suddenly, just above the tree- porter, "I was not seeing things, most state pathologist, a staff tops, to our left, an object came and I am not too overly immember of the University of rapidly into sight. It carried an aginative. And neither is the Varmont College of Medicine, orangish-red light about the trooper."

It was Monday, between\_4:30 above the valley, then disap- about them.

"Then came a third, exactly like the first two. One, two, three, just like that.

"The trooper and I were spellbound. The unidentified flying object, or UFO as they are after launching in July. known, appeared to be round, same thing at the same time, but they were traveling so fast, These sightings have never

Unidentified flying objects speculation. In a recent national course as the first, to our right people should be told the truth

The Air Force has repeatedly denied their existence despite hordes of authenticated reports from reliable witnesses.

Scientists at Cape Kennedy reported UFOs trailing a Gemini space capsule shortly

we really couldn't say." been confirmed by the Air "As we were driving along, Dr. Woodruif assured the re- Force.

New England Newstip Agency, Inc. Box 2078, Boston 6 . Richmond 2-1200

> Free Press (m) BURLINGTON, Vt. Circ. 34,204

> > JAN 2 2 1865

# 5 More Report They Saw Those Bethel 'Saucers'

Five men have written to Dr. Richard S. Woodruff, telling him they saw the three unidentified flying objects the same time he did on Vermont 12 Jan. 4.

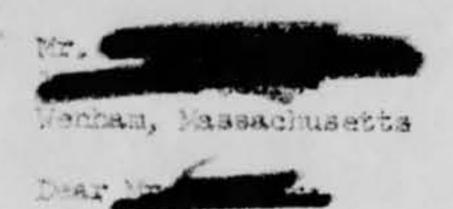
Dr. Woodruff and a state trooper, traveling be tween Randolph and Bethel reportedthey both saw three noiseless objects, flying at treetop level, carrying orangish-red lights at 4:30 p.m.

Dr. Woodruif, who is state pathologist and staff member of the University of Vermont College of Medicine, said four men driving in one car had written they all saw the UFOs.

Another man driving alone also wrote to the pathologist, confirming what he saw.

Dr. Woodruff said there was absolutely no possibility of the UFOs being reflections from window glass, or car lights, as one writer suggested to him.

The correspondents said they had no explanation for the objects but would certainly like to have the mystery cleared up.



The Air Force has asked my opinion of their evaluation of the Bethel-Randolph sighting of 4 January 1965. I regret that it has taken me this long to get to this particular case.

I should like to ask whether you have made this calculation and, secondly, whether I might have access to these additional reports. I rather imagina that the additional reports were not in at the time you submitted your material to the Air Force, as undoubtedly you have wished them to have as much information as possible.

I would agree on the basis of what limited information I have now that the sighting was not one of ordinary meteors, particularly the Quarantids. But in my opinion the bolide hypothesis is not entirely ruled out if the objects were at a great distance. Or in other words, I would agree that it was not a meteor if we can establish that the objects were indeed close at hand. However, I am so used to reports coming in here to the Objectvatory of a bright object that "landed in the next farm yard" only to discover that the person had seen a fireball that landed two bundred miles away. Thus, I feel it is extremely important to establish, if at all possible, the distance of these objects by an objective mixed.

I hope that you will favor me with copies of the additional reports of this sighting and any other additional information which may have come to light since your letters earlier this year. I understand that you are extremely active in this field, one which requires persistence and patience in spearating fact from interpretation of facts and winnowing out whenever possible the often considerable homest errors in the making of observations. May I wish you luck in your continued efforts.

Sincerely yours

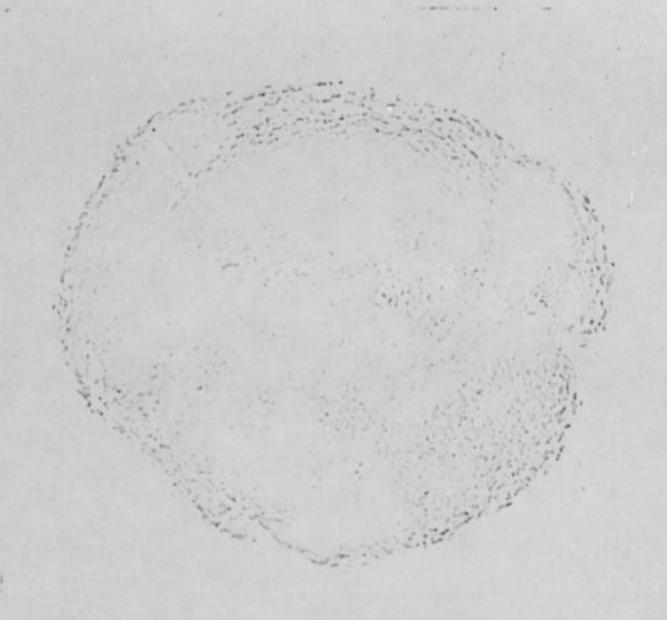
Burlington, Versiont 3 January 1965

opected physician, was driving with a Vermont state policemen, near Burlington, Vermont, when the two wen saw three reddish UFOs pass across the highway et treetop lavel. The objects were soving at such high speed that the observers could not give a detailed description.... Information Only Source: UFO Investigator, Vol III, No 2, April-May 65 Vermont 16 Feb, 1965

A Vermont UFO sighting by Dr. Richard S. Woodruff, State Pathologist, and a State Police official, was dated Feb. 16, 1965, in the last issue. The correct date is Jan. 4. Dr. Woodruff, the police official, and other witnesses saw three low-flying objects race above a highway at an estimated 2,000 mph.

#### Pathologist Views UFO

Dr. Richard S. Woodruff, Vermont State Pathologist, staff member of the University of Vermont College of Medicine, and a Vermont State Trooper were driving on Vermont Rt. 100 between Bethel and Randolph on 4 January 1965 when they saw 3 UFOs. In the Burlington Free Press, Dr. Woodruif was quoted: "As we were driving along-suddenlyjust above the treetops to our left, an object came rapidly into sight. It carried an orange-red light about the size of a football. The trooper said: 'My God! Did you see that?' Just then the second came into view. It flew the same course as the first, to our right above the valley, then disappeared swiftly into the sky. Then came a third, exactly like the first two. One, two, three, just like that. The trooper and I were spellbound. The UFOs appeared to be round, but they were travelling so fast we really couldn't say . .. I was not seeing things, and I am not too overly imaginative. And neither is the trooper." No sound or contrail was reported, nor was there any electro-magnetic (EM) phenomena connected with the incident.





From opposite sides of the world come these very different tektites. At the left, shown natural size, is one from Paracala, Philippine Islands. At the right is a tektite, enlarged to twice its size, found by R. W. Wright at Magnolia, Texas. All pictures of individual tektites with this article are from the Smithsonian Institution, Washington, D. C.

## Tektites and the Cyrillid Shower

JOHN A. O'KEEFE, Goddard Space Flight Center, National Aeronautics and Space Administration

artificial earth satellites in the three years since October 4, 1957, has given new impetus to the study of the only known instance of a natural satellite, or rather a group of natural satellites, close to the earth. These were the Cyrillids, sometimes referred to as the Canadian fireball procession of February 9, 1913.

Many of that shower's phenomena are illuminated by the physical and engineering studies, especially of satellite reentry, that have been made in the last few years. The study of this shower also offers the possibility of explaining the origin of tektites, those strange and beautiful glassy objects found in many parts of the world.

The Gyrillids attracted the attention of

astronomers; when they passed over Toronto on that night in 1913. According to Prof. C. A. Chant of the University of Toronto: "At about 9:05 on the evening in question there suddenly appeared in the northwestern sky a fiery red body which quickly grew larger as it came nearer, and which was then seen to be followed by a long tail. . . . In the streaming of the tail behind, as well as in the color, both of the head and the tail, it resembled a rocket; but, unlike the rocket, the body showed no indication of dropping to the earth. On the contrary it

moved forward on a perfectly horizontal

path with peculiar, majestic, dignified

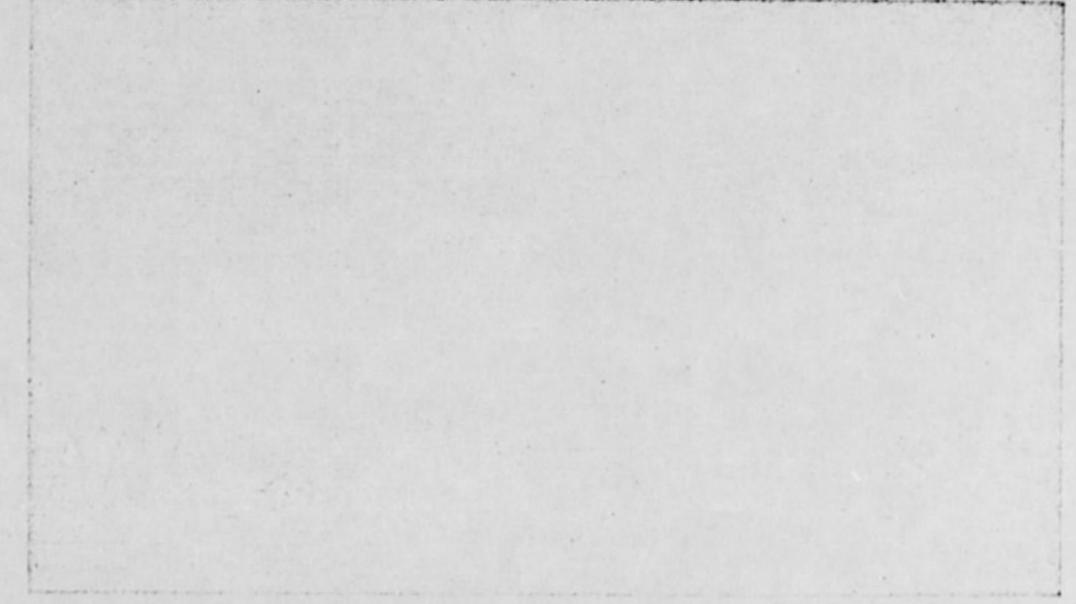
HE LAUNCHING of more than 30 deliberation; and continuing in its twos or threes or fours, with tails streamcourse, without the least apparent sinking towards the earth, it moved on to the south-west where it simply disappeared in the distance. . . .

> "Before the astonishment aroused by this first meteor had subsided, other bodies were seen coming from the northwest, emerging from precisely the same place as the first one. Onward they moved at the same deliberate pace, in

ing behind, though not so long nor so bright as in the first case. They all traversed the same path and were headed for the same point in the south-eastern sky. . . .

"Several report that near the middle of the great procession was a fine large star without a tail, and that a similar body brought up the rear. . . .

"Just as the bodies were vanishing.



As they passed over Toronto and in front of Orion, the Cycillids caught the practiced eye of an artist, Gustav Halm, and his wife. Now 91 years old, he was then an amateur astronomer and friend of C. A. Chant. His painting is courtesy "Varsity Graduate," University of Toronto.



Miss Catherine MacVicar Duncan, Thamesville, Ontario, who drew this sketch, reported hundreds of sparks in group 1, dozens in 2, fewer in the others. Of object 5, she said, "One big body floated along by himself. . . ." The last groups she noted to be much fainter than the others. Her location at Thamesville was about 150 miles southwest of Toronto and slightly west of the Chant trace. Hence the Cyrillids appeared to move toward her right. The eyewitness sketches with this article are taken from the "Journal" of the Royal Astronomical Society of Canada.

or shortly afterwards, there was heard in many places a distinct rumbling sound, like distant thunder or like a carriage passing over rough roads or over a bridge. In some cases three such sounds, following at short intervals, were heard; while a number of people felt a shaking of the earth or of the house.

"The entire time occupied by the display cannot be determined accurately, but [was] perhaps 3.5 minutes."

The observations at Toronto were supplemented by others from as far westward in Canada as the vicinity of Regina, Saskatchewan. In the easterly direction, Chant obtained accounts of the same group of bodies from Bermuda. He noticed that the regions from which he had reports lay along an arc of a great circle, with observers to the east of the circle seeing the shower in the west, and those west of the circle seeing it in the east. On this basis, Chant put forward the idea that the objects were natural satellites of the circle

In the following years, new data filled out the arc over which the Cyrillids were seen. First, W. F. Denning discovered some shipboard observations that extended the arc to twice its original length, into the South Atlantic off Cape Sao Roque, Brazil. Next, W. H. Picker-

CIRCULAD COSIT TORONTO DE SAO ROQUE

Sketched here, not to scale, are a parabolic and a circular orbit in the plane of Chant's great circle. Over Toronto, nearly 50 degrees from Cape Sao Roque, the parabolic are descends noticeably. But the observers' reports of nearly level flight fit only the circular orbit, which is parallel to the earth's surface.

ing located three more shipboard sightings which filled the gap between New York and Bermuda.

Finally, in the period from 1954 to the present, A. D. Mebane has located several dozen accounts in the files of newspapers in Minnesota. Wisconsin, Michigan, New York, Pennsylvania, and New Jersey. These last are especially welcome because they fill significant gaps in the picture given by Chant, and assure us that the phenomenon was actually continuous over its whole extent. In particular, they indicate that detonations of the kind heard in Toronto continued at least 200 miles to Towanda, Pennsylvania.

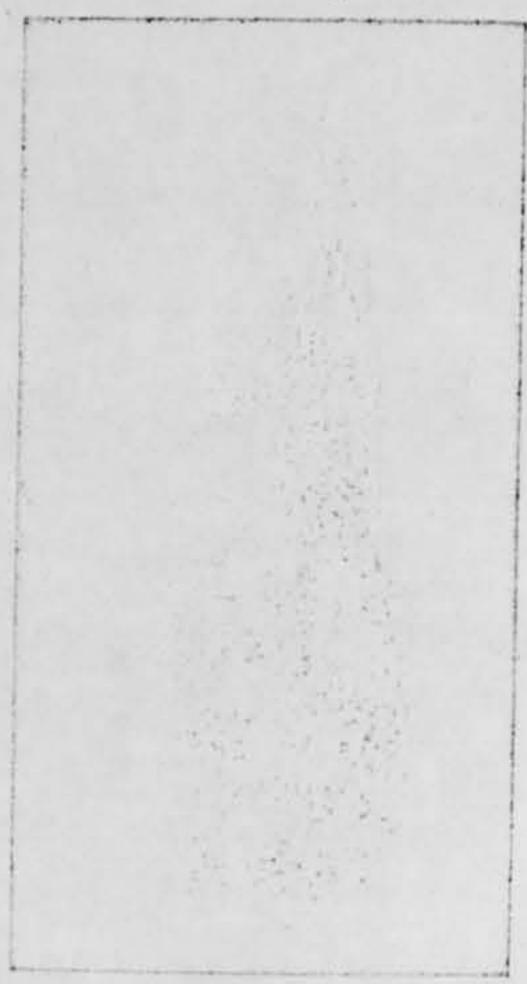
From the observations, it can be shown that the Cyrillids were moving about the earth in nearly circular orbits. To see this, imagine instead that they were moving in meteoric paths of low velocity with respect to the earth. Such orbits would be nearly parabolic in the vicinity of our planet. The diagram shows a cross section of the earth in the plane of the great circle along which the Cyrillids were seen and a supposed parabolic path. In this case, the orbital perigee would have been at Cape Sao Roque and the bodies would have been traveling parallel to the horizon, as observed there. At Toronto, on the other hand, meteors fellowing such an orbit would fall at an angle of about 30 degrees with respect to the horizon. This flatly contradicts the observations, which, as Chant emphasized, point with remarkable unanimity to horizontal flight in this area.

Further, the fact that the individual meteors were seen for periods of a minute or so indicates that their flight was nearly horizontal. Meteors are generally invisible above heights of 100 kilometers and below 30 kilometers. If the Cyrillids had been traveling downward at an angle of 30 degrees to the horizontal, their visible paths would have been some 140 kilometers long. Their period of visibility would have been only 12 seconds, at the parabolic velocity of 11.2 kilometers per second, ignoring atmospheric deceleration.

Obviously, the parabolic solution, with perigee near Cape Sao Roque, will not work. And if we move the perigee north-west along the path, then the meteors would have reached the earth's surface too soon and have been unobservable

from Brazil. If we move the perigee farther to the southeast, the angle at Toronto gets even steeper. Increasing the velocity has the same effect, as the orbit becomes hyperbolic. If we lessen the velocity, however, the orbit becomes satellitic. This last is the only possible way to reconcile the orbit with the observations.

From the physical point of view, the narrowness of the belt along which the Cyrillids were seen is hard to understand unless they were following one another in similar orbits. If this was an ordinary meteor shower, the swarm causing it would have to be very thin — about 100 miles across — and some two or three thousand miles long. Furthermore, the swarm would just have happened to strike the earth so that its plane coincided



This is a moldavire, from Nerolitz in southern Bohemia. The two-times enlargement shows its broken and placed fused surface. Tektites are glassy, and characterized by low indexes of refraction, less than those sypical of man-made glass.



To the nuthor for this research, A. D. Mehane lent his entire collection of positive and negative replies to extensive inquiries along the Chant trace from Minneson to New York City. Triangles show positive observing reports. In the Midwest region of a second possible fall, the round dots show the wholly negative results of a search conducted by the author and his correspondents.

with the center of the planet. Because of the improbability of such a shower structure, and our preceding arguments, we conclude that the objects of the meteor procession of February 9, 1915, were in fact satellites of the earth.

The name Cyrillid is chosen in view of the nature of the bodies as earth satellites. Having been in orbit around the earth, they could have no true radiant, and hence cannot be named, like the Leonids, after the constellation of the radiant. Being associated with no comet, so far as is known, they cannot be named, like the Bielids or the Giacobinids, after a comes. The Perseids, on the other hand, which appear about St. Lawrence's day (August 10th), were traditionally called the Tears of St. Lawrence. On this precedent is based the name Cyrillid, the 9th of February being St. Cyril's day.

Two attempts have been made to find evidence of a second revolution of the Cyrillids. The map at the right is from examining about 200 United States metropolitan newspapers, principally dailies from about 120 sines - practically the emire collection of the Library of Congress. Two doubtful mories fall off the chart, but on the great circle established by Chant. They were reported in newspapers of February 15th in New York and Philadelphia from the crews of ships docking there. Both give incorrect dates for the shower, and one is obviously inaccurate. Whether these points are included or not, it is clear from the map that accounts of the shower are to be found only along the Chant trace.

Assuming that the Gyrillids were earth satellites, we might expect some of them to make more than one trip around. The next revolution, with a period of 914 minutes, would have carried them over the Middle West, above the populated regions of Nebraska, Iowa, and Missouri. In the chart above, the results of a con- some of the satellites would make twice

patch from Buffalo, New York. These negative results, many from areas of clear weather on that night, lead to two important conclusions: They reemphasize the idea, first stated by Chant, that the Cyriffids were visible only on and near a great circle; and they make it very unlikely that any substantial part of the Gyrillid shower survived for an-

other circuit of the earth.

looked by the editors with whom Melane

corresponded. But in the area of the

expected second passing, none of us was

able to locate a single article referring

to the shower, with the trivial exception

of some reprintings of a wire-service dis-

The second conclusion gives us a significant clue to the origin of the Cyrillids. It means that they had been moving around the earth as a group of bodies. for very few revolutions, perhaps only one before the passage over Toronto on which they were observed. Suppose they had been individually in orbit for many revolutions before they were seen. Because they would have different sizes and shapes, the drag by the earth's atmosphere would be different for each of them and would slow some more than others. Several mathematicians working on the orbit of Sputnik I discovered that orbital lifetime of a satellite is inversely proportional to the drag coefficient.

Since it is reasonable to suppose that the drag coefficients differed from one another by as much as a factor of two,

Results of a search through newspapers published at the time of the 1913 meteor procession. Triangles locate observers who reported seeing the shower; dots indicate papers that carried no local reports.



centrated search along this projected path are compared with the work of Mebane along the Chant trace. Many of these newspapers were examined by me; the rest by reliable investigators recommended by state historical societies. I verified my ability to locate such items by checking newspapers along the Chant trace, even locating a few stories that had been overas many revolutions as others. Thus, the entry of the cluster into the lower atmosphere would be spread over a number of revolutions equal to at least half the total number of circuits made by any part of the cluster. Numerical integrations have failed to show any way in which all the members of such a shower could disappear in one revolution.



Part of the display seen by Col. W. R. Winter from Bermuda. As they moved across the sky, two large bodies broke into smaller parts which developed tails of gas and sparks. The slowly traveling procession, which took approximately two reineres to pass a given point, contained some 100 tragments. The curvature of the mils, also mentioned in Col. Winter's written report, was believed by Chant to have been an illusion.

The most probable explanation, it appears, is that the Cyrillids were formed from a single body, which had made a considerable number of revolutions around the earth. Eventually, perhaps as a result of lunar perturbations, the perigee of the body came into the lower atmosphere. The orbit then contracted, in the manner which has become familiar to all of us from artificial satellites: the semimajor axis and eccentricity of the orbit decreased.

In each succeeding perigee passage, the armospheric heating became greater, not only because the successive passes were slightly lower but, above all, because each revolution lasted longer than the previous one as the orbit's eccentricity diminished steadily.

Eventually, the heating became very great, and the body began to melt. Drops. were swept from its surface. Some of these followed the main orbit out to apogee; others, formed earlier, were retarded more. In accordance with the now familiar paradox of drag retardation, these got uhend of the main body and preceded it on the next (final) pass. Tometeorite coming into the atmosphere.

The critical point is that at which the body has encountered a total mass of air equal to its own mass. For a rapidly descending object, this point is reached at a much lower level than for one moving nearly parallel to the earth's surface. At this lower level, the denser air produces a strong drag, tending to split large drops. Hence, the droplets formed from a typical meteorite are much smaller (of the order of half a millimeter or less) than those from a re-entering artificial satellite. Small meteorite droplets have actually been recovered by E. L. Krinov in the U.S.S.R. (SKY AND Telescope, September, 1959, page 617). The larger drops have been observed (but not actually recovered) during the descent of Sputnik II, according to L. G. Jacchia.

Opik's theory also permits us to make a rough calculation of the temperatures, rates of flow, thicknesses of the liquid layer, and other quantities, during the production of the drops. The values found appear to be reasonable, agreeing with the physical characteristics of the



The dumbbell and drop forms of billi-

tektites themselves. Opik also provides

tonites, found in the Malay Archipelago and named for the Island of Billiton, are shown actual size.

While snowshoeing in Parry Sound, Walter L. Height was astonished to see groups of dull reddish meteors moving from the west in apparently level flight. He sketched two groups of four or five bodies followed by a few scattered ones, making a total of about 14. He was most impressed by the slow, measured pace of the flight, estimating its duration as 14 to two minutes. Parry Sound is located about 120 miles north and slightly west of Toronto, quite far from the Chant trace.

gether with more drops formed on the final pass, they constituted the bodies of the shower. The main mass was perhaps identical with the "fine large star without a tail" mentioned by Chant as ending the procession.

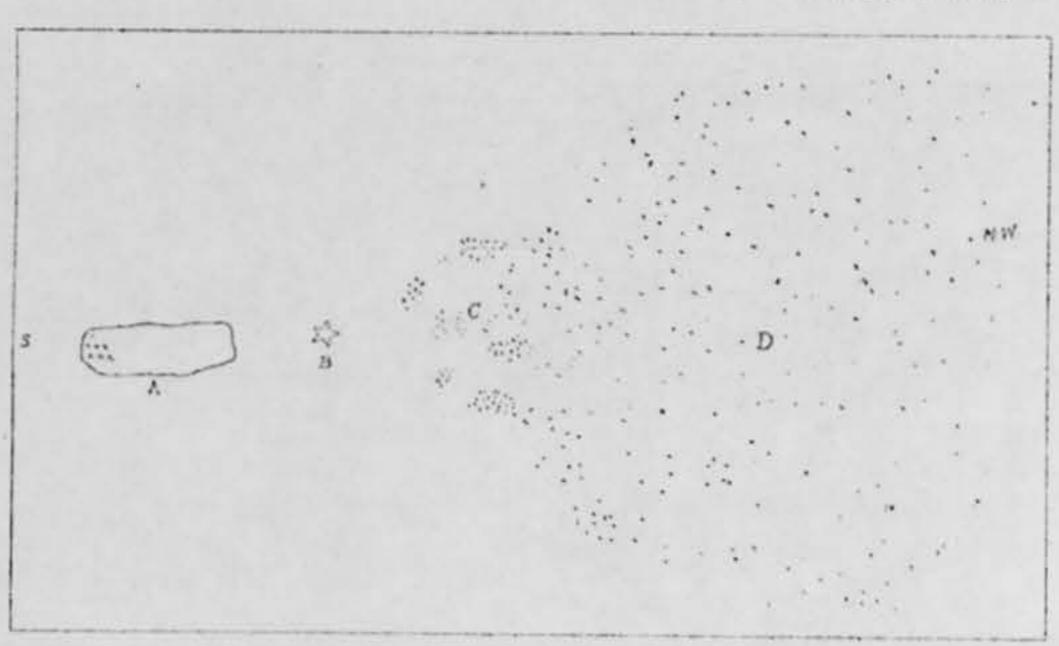
It is very unlikely that fracture played a significant role in the breakup, even if a pressure of 2,000 dynes per square centimeter acted on the body. This is a tenth the pressure a skier might exert on snow, and is not enough to fracture any ordinary solid substance. Over a distime of 1,000 kilometers, however, work amounting to 2 × 10" ergs would be done, enough to melt a layer of stone two centimeters thick. Hence, melting is a much more probable mechanism for the breakup than is fracture.

Detailed calculations have been made on this basis, using the theory developed by E. Opik. One of the most striking resules is that only bodies moving in grazing satellite orbits can yield drops the size of teletites. Such large drops (up to 15 centimeters in diameter) require a very delicate equilibrium. Their surface tension is not adequate to resist drag forces as powerful as those acting on a typical

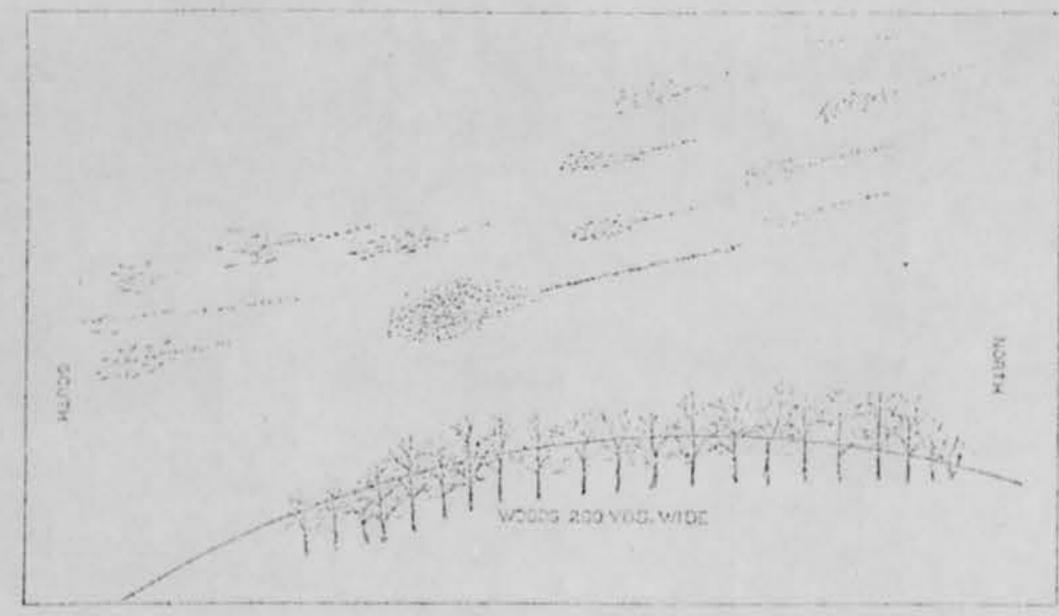
for calculating the masses of the bodies from the integrated luminosities. Despite the rather fragmentary information on Cyrillid brightnesses, it appears that they had individual masses in the range of tektites. From detailed studies of the chemistry of the latter, certain conclusions can be drawn. Their iron is all, or nearly all, in the reduced state (ferrous oxide). With solar furnaces working at the fusion tem-

peratures of tektites, F. Senftle and his

coworkers at the National Bureau of



From Fenlon Falls, 68 miles northeast of Toronto, Walter H. Stevenson counted seven bright, white "stars" in the first group, A in his diagram. They were closely followed by a reddish glow, like the glare from a fire. A bright white "star" at B, estimated to be nearly as brilliant as the planet Verms, preceded several reddish clusters marked C. A shower of red meteors, D. concluded the spectacle. The objects had "about the angular speed of a flying crow" and passed less than hallway up the western sky. The entire display lasted an estimated three minutes.



Seventy-four miles northeast of Toronto, at Centreton, John T. Ormiston compared the lengths of the meteor trails with the trees 200 yards in front of him. The woods subtended an angle of about 55 degrees, and by comparison the longest meteor was some 25 degrees.

Standards have found that only a few minutes are required to reduce ferrous oxide from ferric oxide. In the same way, they have shown that the almost complete lack of magnetism in tektites suggests a heating time of at least a few minutes. The lack of water points in the same direction.

On the other hand, V. Barnes has established that some fine filaments of nearly pure silica that appear in tektites tend to disappear after half an hour's heating. This ties down the heating time of tektites to roughly five to 15 minutes, which is also how long the Cyrillids were hot.

It is even possible to form an idea of the pressures that prevailed during tektite formation, for they contain bubbles in which the pressure is less than a thousandth of an atmosphere.

The association of tektites with showers of the Cyrillid type is thus supported by evidence from the size and form of tektites, their temperature of fusion, the duration of heating, and possibly the pressures involved. And the spotty distribution of known tektites over the earth's surface is consistent with falls of the Cyrillid type and not with those of the showers produced by ordinary meteor swarms.

By contrast, theories of the origin of

tektites from terrestrial material, say by meteoritic impact, have serious trouble on most of these points. It is hard to see how an impact could yield velocities sufficient to propel tektites for thousands of miles, but not enough to distribute them over the whole earth; and we fail to find definite centers from which the concentration decreases in all directions outward.

It is hard to understand the lack of water and magnetism in terrestrial matter, or the conversion of ferric to ferrous iron within the very brief time available for heating the surface material. But most difficult of all is explaining the formation of large drops in the relatively steep descent of a meteorite, if tektites are thought to be meteoritic in nature. It is also difficult to account for the thorough melting of a substantial chunk of glass in the brief time of fall.

On the whole, I feel that the evidence strongly supports the idea that tektites form in showers such as the Cyrillids, and the ultimate origin of the body that initiated this shower is of great interest. Perhaps it could even have been a chunk thrown from the moon by meteoritic impact. The idea of a lunar tektite origin was suggested in this magazine by H. H. Nininger 18 years ago (February, 1943, page 12).



In many parts of the world, brown, green, and black tektites have been found, being named for the locations where they were originally picked up. These drops were found in Australia, where there are estimated to be several million. They are called australia, and have a common tektite shape, that of a button or a lens with a flange. Similar numbers of tektites lie elsewhere, but their distribution is sporty.

Q. Where in the sky is Hubble's vari-

A. In Monoceros, at right ascension 6s 56s. A, declination +8s 46' (1950 coordinates). Also known as NGC 22s1, this fan-shaped nebulosity has the variable star R Monocerotis at its tip. For a Palomar photograph, see Sky AND TELESCOPE for January, 1954, page 79.

Q. I am an amateur astronomer studying French. Is there some popular astronomy magazine in that language you

would suggest for reading?

A. L'Astronomie is a well-illustrated periodical, with articles by both professional and amateur astronomers. It is published by the Société Astronomique de France, 28 Rue Serpente, Paris 6, France. For nonmembers, a year's subscription (10 issues) costs 33 NF.

Q. What basic set of cycpieces is suggested for a 6-inch, f/8 reflector on an altazimuth mount?

A. A lipinch ocular is useful for star fields, clusters, and nebulae; a binch or fields, clusters, and nebulae; a binch or planets; and a j-inch for lunar and planetary observing under good seeing conditions. With reflecting telescopes, Kellner and orthoscopic eyepieces are generally recommended.

Q. What is meant by star names such as 6 G. Sagittarli or 34 G. Piscium?

A. G. indicates that a star number is the one assigned in B. A. Gould's Urano-metria Argentina (1879). This work consists of a catalogue and charts of southern stars to magnitude 7. In each constellation, the stars are numbered in order of right ascension.

Q. How are daily sunspot numbers determined?

A. By adding the number of visible spots to 10 times the number of spot groups. This total is multiplied by a constant, for most observers not far from unity, to bring the daily number into average agreement with a standard series, such as the Zurich sunspot numbers. Much care and observing experience are required to obtain consistent results.

Q. What is an H-R (Hertesprung-Russell) diagram?

A. It is a graph in which the vertical scale represents stars' absolute magnitudes, the horizontal scale spectral classes, intrinsically bright stars are near the top of the diagram, faint ones below; hot, blue stars are toward the left, cool, red ones to the right.

Q. How fast does an asteroid appear to move with respect to the star background?

A. At opposition, the westward motion of a typical asteroid is about 10 to 12 minutes of arc per day.

W.E.S.



FTD (TDEW)
Wright-Patterson AFB, Ohio 45433
19 Feb 65

Dr J Allen Hynek Dearborn Observatory Northwestern University Evenston, Illindes

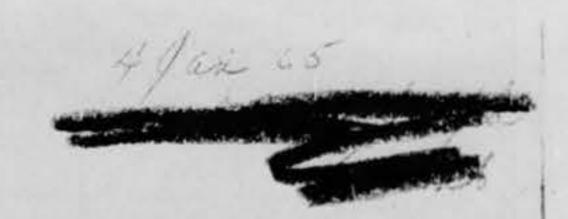
Dear Allen,

Reference the attached information which is self explanatory. We request your evaluation on the observation and any ammunition for our reply to Management Since he is one of our most prolific pen pals a reply is in order without undue delay.

The information regarding the size of an object which would subtend an arc of a football at arms length, is desired.

Sincerely,

HECTOR QUINTANTILLA, Jr Major, USAF Chief, Aerial Phenomena Branch



TDEW

Reported UPO:

22 Jan 65

Hq USAF SAFOI PB Wash D C 20330

1. We have received a reported sighting by a series and a Vermont State Trooper from the series, Wenham, Massachusetts.

- 2. The Air Force evaluators regard this sighting as a probable observation of meteors. The attached sheet indicates that the Quandrantids meteor shower was occurring during this period. This is one of the more active meteor showers.
- 3. It is suggested that the American Meteor Society, since he maintains a card file on observations of this nature.

FOR THE COMMANDER

ERIC T de JONCKHERRE Colonel, USAF Deputy for Technology and Subsystems 1 Atch

Wenham, Massachusetts May 1, 1965

Dr. J. Allen Hynek Dearbern Observatory Northwestern University Evansten, Illinois 60201

Dear Dr. Hynek:

Tam in receipt of your letter of 15 April 1965 requesting additional information concerning the Bethel-Randolph sighting on 4 January 1965. I regret to inform you that very little information other than that sent NICAP and AFSC(FTD) has been collected. That information which has been collected is enclosed in the form of letters and questionnaires related to our investigation. Unfortunately NICAP does not have a subcommittee in Vermont and our subcommittee usually operates only in Massachusetts where direct on-the-spot interviewing and investigation is convenient for us. In this investigation all communication with the witnesses was by mail. We have tried to obtain further information such as you asked for but have had no response. I am sure you are aware of this kind of problem.

This is one of the many UFO reports that are "border-line" cases. As you know an sutline of facts tending to negate the Quadrantid meteor theory was compiled and included in our reports sent to MICAP and BLUEDOOK. We pointed out that these facts in themselves did not prove that the objects were not meteors but that the Air Force evaluation was at least questionable. It is interesting to note that our New England newsclip service did not pick up any other reports of this phenomena and that the Smithsonian Institute received no reports of a bolide on that date.

Insists that the objects passed in-front-of hills not over four miles away and all witnesses had the impression that the objects were near. This suggests (especially if is correct in his observation) that this sighting was "localized" and unsual to say the least. I will enclose the names and addresses of the witnesses. Perhaps you can invoke a response from them.

Enclosed is information concerning our subcommittee and a letter to you from Hartin Shapiro who is on it and once worked with you at Harvard Observatory. Our adviser, Walt Webb once worked for you and has spoken highly of you. Re page I of the UFO Investigator concerning the sighting by the Federal Law Officer. On a recent business trip to Seattle I met the chairman of the NICAF subcommittee who investigated this report. He is Dr. Pilet (Ph.D Celestial Mechanics) who heads a Boeing Aerospace research team. All the best to you in your work with the USAF. I look forward to Jacques Vallee's "Anatomy of a Phenemenon".

Tours sincerely,

Or Hynds, of the footh own was not to all the production of Joseph and the foother was and the foother of Joseph and the state of the s

The USAF has ached our conscitutes for additions information concurring your circulating of three 181 underwelfied daying objects on Seniory A. 1915. — Her Very 182 has Lindby substituted information on Sala signifies course. Sense in the such confidence up to traite up a develop ferrouse there are vital as to ensure the few questions finished before and return this ferm to no prespely? I have enclosed an addressed sumped envelops for your convenience?

- L. How Long died you soo good object? Seeende approx.
- 2. Now Long was the interval bottmen each object? Lo seconds deferox
- 3. Did the TFOs pass in front off anything? (such as hills, twose?)
  incuses, tolophene pile?

  a. What did they pass in front of? Yes. Hills.
  - b. Bon few was what they passed in front of from you?
- the Her de your conducted Mereyer out mile. They hassed

bearing tree tops not one mile distant.

To de a comedat that we have this additional information as-seen-ac possible. We appropriation.

Young spreadly of the Housest Charles and

RISP/Sport

Lowery Brainsy long hadd Paran, I am the west for more and and and in there is from a from the said of the some type short or your for the John you, it was returned to total and sends the three my words on the destre y such aspecient in the property of where I when in significant to my time sich some weeken with The division remodelphi Chr. and . - rhe in it woods took and there towned the water some freg I wit in white northe of postfelle et Approximating 4. 50, 3 . Birds The first orgate. The Two sellowing appropriate at more interrela they spy with the buttered is into perfectly would. He riggs on on produce to the Southout. They seemed to inver a short time of representation which is would from my der 3 me any of the sale 4 is, I multi suit